ATARI COMPUTER ENTHUSIASTS

The Summer is over and we are proud to bring you a larger issue of the Original A.C.E. Newsletter, containing articles on:

Databases   Spreadsheets   Games   Emulators (Mac and IBM)

Plus all the latest news from Atari Corp.
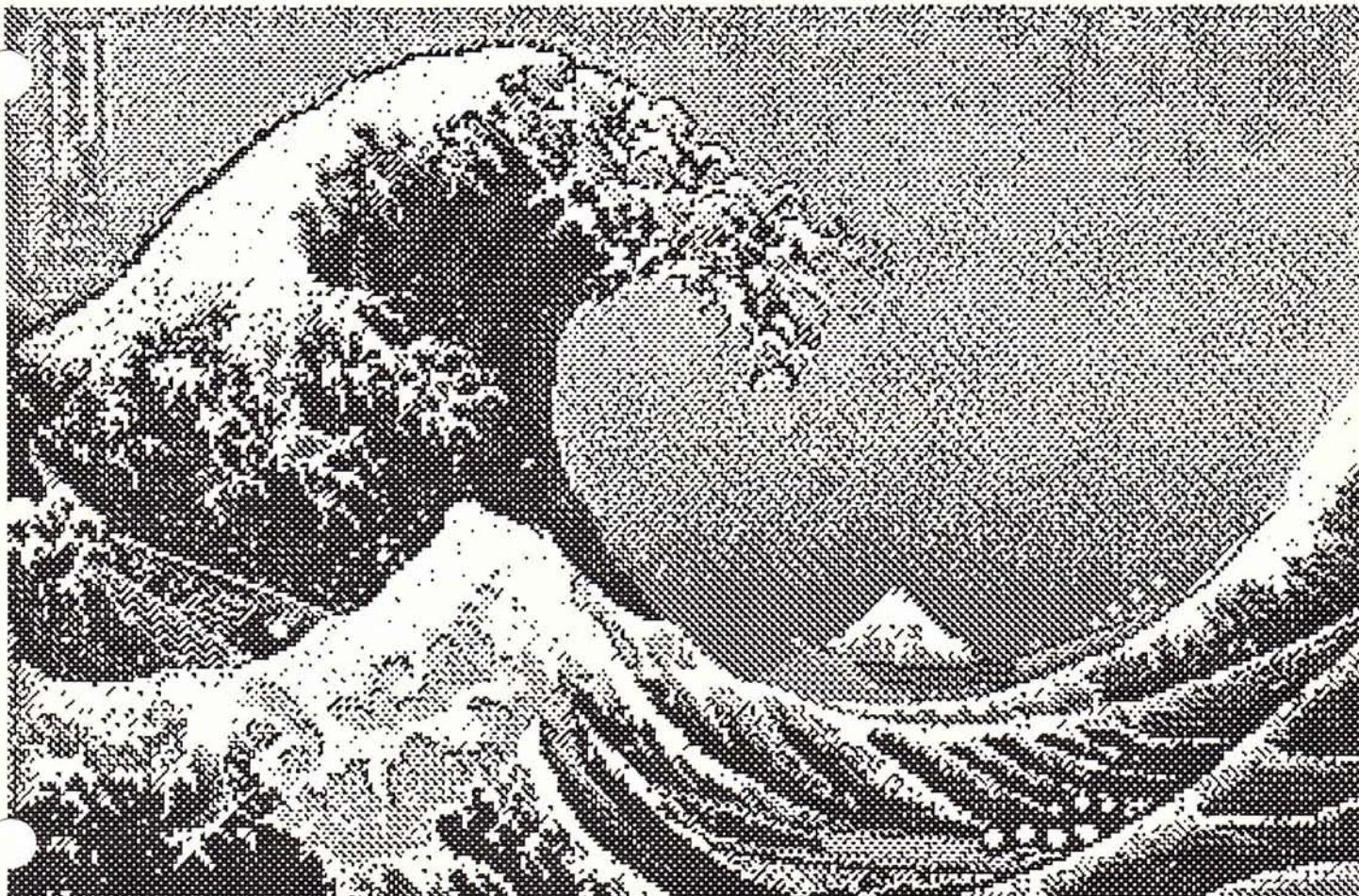
Catch the wave of new software for Atari Personal Computers, read the A.C.E. Newsletter

News and Reviews

It has been a very busy summer. Many of our key members have been away, so the newsletter is somewhat late. We will call it the July/Aug issue, and by next month hope to be back on schedule. Our plea for all of you to order some disks to help fund the newsletter and BBS did not yield much from US members, but those of you from Australia, New Zealand and Canada did more then your share -- thank you!! We have pared our mailing list down to those of you who pay and those clubs who really exchange rather than just copy, and in other ways have cut costs to the bone, so we should do OK.

The BBS has had some problems this summer, as those of you who called may know. Ralph Walden, the author of the *OASIS BBS* and former ACE sysop moved away; there are now several people involved in running the BBS, so things are not as smooth. We have had some equipment problems, etc., but everything seems OK now. Ralph will be coming to Eugene soon with a new version of the software, so hopefully no more problems. We will soon get PC-Pursuit again, so can more easily provide updated software for all of you. It is difficult to get people to spend much time at the computer in the summer in Eugene because we have only a short time of nice weather, no one wants to spend it inside.

Last month, I was visiting in-laws in the San Francisco bay area, and noted an ad in the newspaper for a "World of Atari" fair. It was only about 80 miles from where I was, and happened to be on-route to our next destination. So we stopped on the way, and while my wife sat in the car, I ran through the fair. I saw the Mega ST, the Atari PC, and the laser printer. The display on the Atari PC was extremely sharp; the GEM display was almost identical to the ST. It was actually difficult to tell the two apart by the displays except the PC was bigger, and although as sharp as a monochrome ST display, was in color.
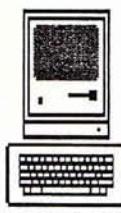
At the fair, I ran into Dave Small (Magic-Sac), who informed me that there is a new upgrade to the software that now runs most everything. The version 4.2 allows double sided disks, etc, but this new version solves the problem with the software crashing. He gave me a copy, and their are upgrade files on many BBS' that allow you to upgrade the 4.2 if you bought one ($10)(Please note that the current version of Magic Sac software is 4.36/ also 4.5 is just around the corner, contact Data Pacific for more details). He also had *EPSTART*, a program allowing you to use an Epson printer to run with Mac software; I got one of those also, but have yet to figure out how it works- tune in next month. The most exciting news is that the interface to allow ST drives to read Mac disks directly is finished and being manufactured now. It should be ready any day, with a cost between "$100 and $200" according to Data Pacific's final cost, I guess.

Also showing was a nifty optical scanner to hook to your printer and reads graphic data (Jim Bumpas just bought one and will report on it soon), and a very impressive digitizer using a TV camera and color by ComputerEyes. You can modify the picture, change the colors, etc, before saving it and loading it into one of the drawing programs (Degas, Neochrome, etc.) and printing it out. For professional use, Navarone Industries, the company which now sells the hardware items that Hippo used to, now has a Image Scanner using the Canon IX-12 for $1240.

WordPerfect showed their almost completed word processor which does everything possible for $395. There were many new products, but with such a short time available to me, I couldn't do much. A number of user groups were there and I did talk to some of them.

Leisure Suit Larry in the Land of the Lounge Lizards (Sierra On-line). As many of you know, I never play computer games or review them, but when Sierra On-line sent this one, I was intrigued. An adult 3-D animated adventure game, that "plunges beyond G-rated material of other adventure games into the fast lane of reckless gambling, excessive inebriation and rampant whoopee." Now, that sounds interesting. I booted in the program, and was told I had to answer 5 trivia questions to prove I was at least 18 years old and allowed to play the game. The questions are different each time you boot in, and I doubt if anyone under 18 or so could easily answer them. Each time there also seems a question only a younger person could answer; at least they made no sense to me, but the rest were easy for any oldtimer. After being approved, our "hero" is about ready to enter a sleazy bar. Using the mouse to move and the keyboard to enter commands, we enter, and see an interesting looking lady at the bar. We can play music on the jukebox, have a drink, and go to the toilet. The scenes are very nice, the action reasonably quick, and the dialog fun. I have spent several hours playing this game (a record for me), and already have 8 points out of 222 (another record for me in adventure games) and actually plan on playing much more (unheard of!). A game with a great deal of fun!

We also received two very nice new books from Abacus in their large and expanding series for the Atari ST. One is a new book for beginners, the other an advanced book on disk drives, including hard disks, that is mostly software oriented. They are currently under review by the appropriate people (a beginner and a disk drive expert respectively), but both look very good and cover the needed material. The disk drive book especially is a must if you have an interest in developing software for 3 1/2" or hard disk use.

Thank all you wonderful members for your continued support. Remember, everyone who works for ACE and the newsletter gets paid nothing; we use only genuine slave labor, so if we make mistakes, are sometimes late or have equipment problems, we do try.

-- Mike Dunn, Co-Editor

BUMPAS REVIEWS

VIP PROFESSIONAL -- You can now order upgrade v.1.2 of *VIP Professional* from ISD Marketing, Inc., 2651 John St., Unit 3, Markham, Ontario, Canada L3R 2W5. There is a GEM upgrade AND a text version upgrade. $35 will get you either upgrade; $50 gets you both. This version is improved over the current GEM version by providing faster output to printer and to the screen (scrolling). It also has faster math processing and a larger data buffer. And it corrects some of those annoying bugs which cause the ST to get taken over with "System 2", "System 3", and (gasp!) even "System 4" errors.
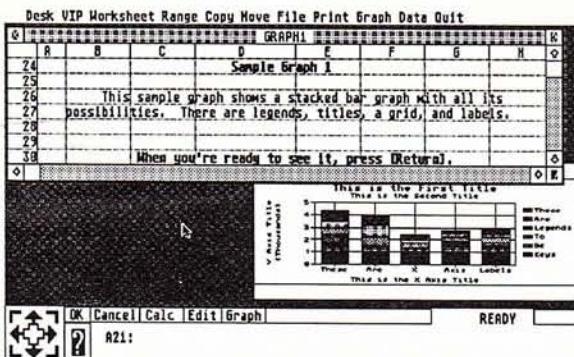
Seems like the price is a little steep, since we only had to pay $20 to upgrade from the original text version to the current GEM version. But compared to the $250 price for the program, this upgrade cost seems not very much. They want your money before September 30, 1987 when the upgrade offer expires. I'm still hoping to see a significant upgrade, more on the scale of Lotus v.2 compatibility. ISD, is this in our future?

PC-DITTO -- I feel like I just stepped through a time-warp. When I paid $799 for my ST, I sold the 384k IBM PC system I had been using for about $1700 (I probably couldn't get $500 for it today). Little did I know, my (now 1-meg) ST has lurking within its innards an IBM XT clone with 703k RAM. Well, the ST needs a little help. The help comes from Avant Garde Systems in the form of a $90 program called *PC-Ditto*. The documentation to this program certifies hundreds of PC- and MS-DOS programs as compatible. The program emulates 8088/8086 IBM PC XT systems and clones.

There is a MAJOR bug. The program will not output to an Atari monochrome screen. They are working furiously to correct this unpleasant discovery. But it will emulate both IBM monochrome AND color displays. It will not run any programs which run on clones and do not run on IBM machines. It will not run any programs written in IBM Basic or Basica. It has one other major limitation: You will probably not want to run any programs which depend upon bit-mapped graphics. The emulator is VERY slow too display graphics. I ran Broderbund's *Ancient Art of War* (the ONE IBM program I might have used). The graphic screens are very prettyl, but it takes hours to move the cursor around the map. I gave it up. *Flight Simulator* is slow, anyway, so you might not notice.

For any text-based programs, and those which use character graphics, the speed will be acceptable. You might not even notice it's slower, especially if you use the 2 speed-up programs provided with *PC-Ditto* (Speedy3 and Qwickeys). I may be one of the first Atari ST users to use *Word Perfect* (v.4.2) on an ST. In fact, I'm writing this article with it. Of course, we're going to have WP v.4.1 in its GEM incarnation for the ST "any day now". *Lotus 123* and its various clones also work fine (I tested *VP Planner* and *PC-Calc*).

I loaded in a worksheet from my *VIP Professional*, and had no trouble using it with *VP Planner*. *Telix v.212* works great, but I couldn't get *Procomm* to finish "initializing". I'm not sure if this is because the emulator is slow, or some other problem. I left it on overnight and it was still initializing the next day. Procomm is one of the "certified" runners by Avant Garde. Maybe they only checked to see if the title page boots up. It does, and nicely, either monochrome or color. But that's as far as I could get it to go. {Note - *ProComm* does indeed work, but *Flash* is much faster.}

Other programs I ran with success include *dBase III+* (so I assume dBase II and III also run fine). Calculations inside spreadsheets and a PD Bridge game I tried were slow. And you'll not want to wait for Lotus to draw you a graph. But a draw Poker game played with no noticeable delay. Another program, called *World* draws maps of the world to nearly any scale and focussed upon nearly any coordinates. This program seems to work as fast as Antic's *Maps and Legends* (I'm suprised to say). Except for the novelty, I expect home users probably won't find much use for this. But the very novelty of this successful execution of the idea of an emulator could produce a major marketing success. Now all those people who really want an Atari, but can't bear to cut the umbilical from mama IBM can get their Ataris and for $90 more have their XT clone! For those, also, who just have to be able to run their IBM software from work when they're at home, PC-Ditto will suit their needs. I have very little conception of the programming problems, but I suspect that if Avant Garde can speeed up the graphics by a factor of 10 or more, graphics displays will be acceptable.

ST X-Press -- ($8.50 per issue with disk, Box 2383, La Habra, CA 90632) is a relatively new magazine with a good-quality look about it. Its 68 pages are chock full of columns centering around major interests such as programming languages and MIDI. It has 5 feature articles, reviews of 18 products, and all the miscellany usually found in magazines: Letter columns, editorial, rumors, etc.

The disk which comes with the magazine contains source code and executable programs to go with some of the features in the magazine. Program listings are included for illustrative purposes in the language articles, but these are not a major part of the magazine. The disk is supposed to serve this purpose. This July, 1987 issue contains all sorts of goodies, including *DCOPY* v. 1.91 (?) and a very interesting digitized slide show of Star Trek stars (Spock, Kirk and Bones). It also contains about 5 recent issues of Zmags.

The same company which produces this magazine also has 2-meg ($495) and 4-meg ($895) upgrades for ST machines. They claim compatibility with the new ROMs and the blitter chip. They promise a "1-week" turn-around, including shipping. And they offer a 10% discount to members of user groups.

DBASIC -- (DTack Grounded, Inc. 1570 Pacheco, B-7, Santa Fe, NM 87504) is a compiled basic written by some engineer types who claim it's faster than the best compiled Cs (Megamax or Mark Williams) on the ST. *DBASIC* autoboots on the ST and pre-empts the operating system with its own DOS. *DBASIC* will run on any ST. *DBASIC* compiles your program, line by line, as you enter it. A 280+ page manual explains the verb set and a description and history of *DBASIC*. This is a very interesting and complete implementation, you even get control of graphics commands on the ST. DTack Grounded, Inc. has also done another very good thing, from our perspective. The "Chief Marketing Idiot" (his description of his title, not mine!) has provided our user group with 20 copies of the *DBASIC* manual, and permission to distribute 100 copies of the program to our members. They've provided 100 disk labels with their copyright notice and a license to make 100 copies. This is quite a boon to us as we need some money to pay us out of a little hole we've dug for ourselves. So we'll ask a donation from anyone requesting a copy of this program. We ask $5 for the disk and $5 for the manual. If you don't get a manual from us, and decide you want one later from DTack, they will sell you one for $42 or so. DTack Grounded, Inc. is willing to do this so their program gets wide distribution and people begin using it widely. Sounds good to me.

BALANCE OF POWER -- This program from Mindscape was written by Chris Crawford for the Mac. It's been ported over to the ST for our enjoyment. The game makes full use of drop-down menus and mouse control. Players may take the US or USSR position, or both, for a 2-player game. But this is more a lesson in US foreign policy than it is a game. I'll explain.

As a game, Balance of Power has an extremely limited variety of strategies available to the player. Your job (more like an adventure game) is to discover the responses which lead to success. You can't just take over US foreign policy and begin supporting all the revolutionary regimes in the world and undermine all the dictatorships. The Russians will walk all over you, the revolutionary countries will doubt your sincerity, and your dictator friends will get angry. So, if you try to avoid being another Ronald Reagan as the US player, you're bound to be frustrated.
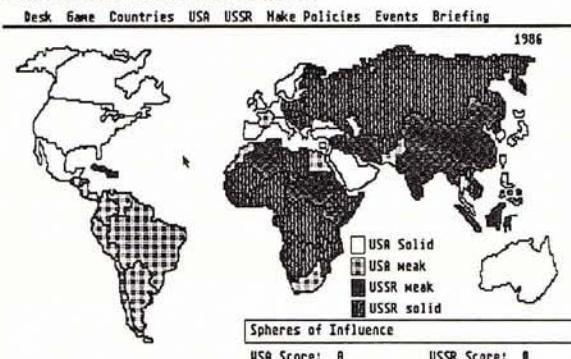
If you accept these parameters to the game, what you have here is a very challenging game (lesson, really). The Beginner level permits you to manipulate only military aid and the deployment of armed forces. The Intermediate level adds economic aid and various levels of destabilization, including coups d'etat. The Expert level adds "finlandization". The highest level is the "Nightmare" level. The name describes it best. Your object is to gain world prestige and to limit the prestige of the Soviets. But you must avoid nuclear war in the process (those Russians can be pretty pushy!). You have a "national security council" to advise you upon the risks inherent in each action. They will assess the situation and quantify it for you; i.e., the importance may range from very slight to "utmost". However, these assessments lose more accuracy at each level up the scale. At Nightmare level, the security council is almost always wrong. See what I mean? And I haven't been able to figure out ANY way to prevent the Russians from invading Iran. That gets them several hundred points. This big point gain is almost impossible to recover by the time the game ends in 1993.

Those of you familiar with Chris Crawford's work on the 8-bit Ataris will be surprised at the lack of graphic action and color (of course, he wrote it for a monochrome Macintosh!). There's almost no dynamism to the game mechanics itself. Almost everything exciting is taking place inside your head. The screen usually displays the same map of the world with different configurations of color or texture (monochrome) denoting the status of the various regions of the world which are significant in a particular game. The game also includes a widely ranging "almanac" of the world. You can read

newspapers of current events; you can pull up displays showing populations, violence levels, number of telephones per capita, etc., for any region in the world. Much of the data you might find in a world almanac (circa 1986) is reproduced here.

I hope we see more of Chris Crawford's work on the ST. I was a big fan of his on the 8-bit Atari. I still enjoy playing his games on those "little machines".

FASTER -- *FaSTer*, the disk magazine, has just appeared in its volume 2 number 2. This disk-only magazine just keeps getting better and better. It's the only fully integrated magazine on disk I've seen. It autoboots and the drop-down menus all access areas of the magazine: Cover graphic; centerfold graphic; editorials, opinions, reviews, executable programs (Utilist and Cribbage this issue), source code, hints on adventure game play, interviews, and information about buying PD disks and subscriptions to FaSTer. Write them at Box 474, Boucherville, Quebec, Canada J4B 6Y2 for more information.

ACE is the highlighted user group in this issue. Thanks, FaSTer!

-- Jim Bumpas, A.C.E Co-Editor

Fleet Street Publisher

There is a new entry into the "Desktop Publishing" game, when it comes to the 520/1040ST line of personal computers, and it's name is *Fleet Street Publisher*. As many of you already know the newsletter you are currently looking at is composed with *Publishing Partner*, but since *Fleet Street Publisher* is such a markedly different program, this will not be a direct item for item comparison of the two. Instead I will present *Fleet Street Publisher* on it's own merits and let you be the judge as to it functionality.

Fleet Street Publisher is a completely GEM based, page layout program. The three disk package contains the main program, and resource files for both monochrome and color users, some fonts, a folder of help files, and a folder of demonstration files used in the *Fleet Street Publisher* tutorial, all located on the 'SYSTEM DISK VERSION 1.0'. On the 'FONTS' disk are 12 distinct fonts in a variety of point sizes. Then the 'GRAPHICS LIBRARY DISK' contains numerous pieces of clip-art and a program which converts DEGAS and NeoChrome files to the IMG format used in Fleet Street Publisher.

All that is necessary to run *Fleet Street Publisher* is 512k of RAM, TOS in ROM, one single sided floppy disk drive, a monochrome or color monitor and an Epson FX-80 or compatible dot matrix printer. Laser printer drivers are an extra cost option available from Spectrum

Holobyte, $30.00 for the Atari laser printer, and $50.00 for PostScript compatible laser printers.

Extensive utilization of dialog boxes make using *Fleet Street Publisher* a straightforward proposition. Drop-down menus also provide the friendly user interface ST owners have come to expect. Each page is set up as a separate GEM window, with scroll bars, full window box and close box, and the zoom factor can be set individually for each window (see figure 1). Using this approach, obliges the user to complete each page before going on to the next, which is a good practice to get into anyway. And there is a separate text window in which the text you are editing can be displayed at 100% magnification.
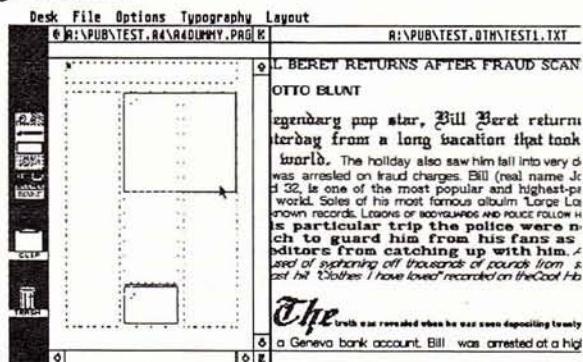
Almost the entire ST character set is supported by *Fleet Street Publisher* fonts which include: Sans Serif, Serif, Helga, Medieval, West End, and College. All typefaces may be italicized or bold or both (see figure 2), and all are available in point sizes from 10 to 30. The point sizes supplied are not the only ones available, but these are the ones that have been optimized for both screen and printed output, all other sizes (from 4 point to 216 point) must be calculated by the program before use. one other note about font sizes is the larger the font the more memory required to display/calculate it, hence less memory for your document, if you use many fonts or large point sizes then consider 1 megabyte or more RAM a necessity.

All commands can be accessed through the drop-down

menus and dialog boxes. Up to 20 frequently used commands or series of commands can be saved as 'key macros', which are accessed with function keys, or alternate-function key combinations. Each set of twenty commands can be saved in separate .KEY files and can be recalled at any time.

The layout of each page relies on the use of 'style sheets', blank pages with text columns and picture elements already set. As each page is completed, an new blank page is loaded. When finished, each page is then printed out one by one. Here is where you see the limitations of *Fleet Street Publisher*, the output is simply Epson quad-density graphics output, no where near the quality needed for professional publication. There is a provision of saving the page as a .GEM file to be output by Digital Research's OUTPUT.PRG. GDOS is not currently supported, but as Atari finishes work on GDOS, Mirrorsoft will include GDOS output in future revisions of *Fleet Street Publisher*.

Fleet Street Publisher's algorithmic hyphenation works as fast as text is entered or flows into column frames. It's logic is generally good, but can be customized with personal rules. I found no way to include or add to an exception library, and the currently known exceptions are not displayed in the program or in the documentation.

Tools are also included for drawing lines and borders, and there are a variety of fill patterns available. Pictures can be easily imported, as long as they are in the IMG format. These picture elements can then be rotated, cropped, or scaled, or any combination of the above. Each of these features are accessible with simple keyboard commands.

The documentation is very well done, and includes a tutorial to guide you through the major functions of Fleet Street Publisher. After the tutorial you should be familiar enough with *Fleet Street Publisher* to produce quality pages. Also included in the documentation, all pieces of clip-art are in printed form, as well as a sample of all fonts. There is a glossary of typographical terms, and a guide to producing your first publication.

Before investing in *Fleet Street Publisher*, carefully consider what type of publication you need to create, and also the tools you have accessible to you. *Fleet Street Publisher* is at it's best when composing short, simple publications. The additional power in the automatic hyphenation, image control, and column layout, will help to make those types of documents really outstanding. *Fleet Street Publisher* from Spectrum Holobyte /Mirrorsoft, 1070 Marina Village Parkway #203, Alameda, CA 94501, (415)-522-3584. Retail price: $149.95

-- Buddy L. Hammerton Jr., A.C.E. Production Manager

NEWS FROM ATARI

The Mega ST and the SX212 modem are at the last step before arriving. We have received pre-production samples. These are the first units off the line with all the same components, packaging, and production techniques as the real thing. We get a small number of these to test and make sure there are no last-minute glitches. When we give the go-ahead, the next step is real production.

The Atari PC is looking likely for later this Summer. The XEP-80 (for the 8-bits) is waiting on one part which turned out to have an incredibly long lead time on orders -- once we have the part we'll turn these around ASAP. The SLM804 Laser Printer is waiting on one final component also, as well as the final version of the software drivers to support it.

New software from Atari includes the first titles in the Arrakis Advantage series of middle-school-level educational programs. There will be 17 in total, of which 4 have hit the stores already and the rest are in various stages of finalization.

Shortly after the SX212 modem hits, we will release an add-on package for 8-bit owners which is to contain an SIO cable and the program SX EXPRESS by Keith Ledbetter, as well as the new handler file. Of course, SX212 owners with the 8-bits can also use it through the 850 interface using existing terminal programs set up for Hayes-compatible modems.

The blitter chip is working and is in the pre-production Mega ST's mentioned above. The AMY chip is still in development, and may still see the light of day -- some day. AMY is a stubborn beast.

Speaking of stubborn, Microsoft Write is also still in development. Nearly finished now, too, although a few small bugs remain to be expunged.

SHOW NEWS: Atari made history by becoming the first computer manufacturer to exhibit at NAMM, the National Association of Music Merchants show in Chicago. The ST was present throughout the show in virtually every booth where there were MIDI instruments. Atari sales people at the show were beseiged by music dealers eager to sign up as Atari dealers. By the time this 4-day event was over, there were literally hundreds of dealer applications waiting to be approved. Before NAMM, Atari had 50 music stores as dealers -- it looks like there will be 250 when the new dealers are selected.

In other news from NAMM, Keyboard magazine announced the results of its latest reader survey. The Atari ST computer has rocketed into the #1 slot in the

vital "Intent-to-buy" category ahead of perennial leader Macintosh! The word in Atari HQ is "Today MIDI -- tomorrow, Desktop Publishing!"

CAD-3D 2.0

Tom Hudson and Jez San (of StarGlider fame), have collaborated on the latest (and fastest) version of the amazing computer aided design program *CAD-3D*. Since my experience with the original *CAD-3D* is very limited, I will not include any comparisons between the two versions. Although *CAD-3D* and *Cybermate* are one single package, each program will be reviewed separately, to provide a more complete evaluation. *CAD-3D 2.0* requires one megabyte of RAM, one disk drive, a color or monochrome monitor. Optional items include, a second disk drive, printer or plotter, hard disk drive, *Stereotek liquid crystal glasses, DEGAS Elite* or *NeoChrome*.

The opening screen of *CAD-3D 2.0* consists of the Icon Control Panel (see Figure 1), where most of CAD-3D's features are accessed. On the right two thirds of the screen the views of the CAD-3D universe, labeled: Camera, Top, Right, and Front, are displayed. Through these windows your object(s) can be seen.
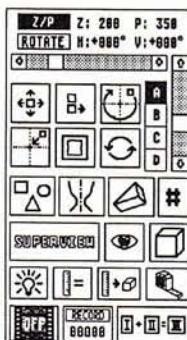
Icon Control Panel
Figure 1.

Overall work flow involves extensive use of the mouse, which, in my opinion, is the preferred method of control in a program of this type. The only area where mouse control becomes a bit tedious, is when animating CAD-3D objects. This situation is simplified with a desk accessory called P*D3DCTL.ACC*, a batch language processor for *CAD-3D 2.0* animation. For people who dislike mice, or desire keyboard control to manipulate objects, almost all *CAD-3D 2.0* commands can be executed from alternate keys, function keys, and single letter keys. For the most part these command keys are mnemonic, that is the first letter of the command corresponds to it's associated keyboard command letter. *CAD-3D 2.0* does a good job when it comes to dialog boxes, all file maintenance tasks, such as remembering

file names, disk path names, etc. are recalled for you when you want to save your work. Also there is a provision for setting your default positions, zoom power, perspective, and other pertinent information dealing with your view of the *CAD-3D 2.0* universe.

Documentation is a difficult thing to judge, but *CAD-3D 2.0*'s manual, written by Jack Powell of Antic Product Development, is very well done. The documentation contains the usual screen illustrations, a large reference section, an index, and most importantly a tutorial. A word about the index, if you have not read the entire manual, the index will not be much help, as it is very small and incomplete, a larger index would be welcome. The tutorial comes in two parts, the first is an introduction to the most common *CAD-3D 2.0* commands. It shows the creation of basic shapes and explains simple techniques for manipulating these objects. Items discussed are lighting, coloring, scaling, and viewing objects. Part two provides a much more indepth look at the advanced functions. Creation and control of complex objects, as well as, spinning, joining, animating, measuring, and extruding are among the topics covered. After proceeding through both parts of the tutorial, an individual should be familiar enough with *CAD-3D 2.0* to do most any type of object operation. All in all, I can categorize *CAD-3D 2.0* as an admirable performer. The speed increase over the original CAD-3D 1.0 is significant. The power behind the animation features is truly awesome. And the stereo option along with the *Cybermate* package will provide the necessary tools to produce unique animated "movies". Available from The Catalog, 544 Second Street, San Francisco, CA 94107, (800)-443-0100 ext. 133, at $89.95 a real bargain.

-- Buddy L. Hammerton Jr., A.C.E. Production Manager

BARBARIAN

It is becoming more and more difficult to review 8-bit software as very little is being produced. Occasionally there is a new program "ported over" from another machine, but that has been about the extent of anything new.

The ST, however, remains alive and growing. In spite of the fact that summer is notoriously slow for computer interest, there have been several new products for the ST that are worthy of note. With few exceptions products released within the month have been quality releases.

One new program with "spectacular" graphics is a release from Psygnosis of Great Britian---the folks that brought us *Bratticus* in the pioneer days of the ST. The new program is called *Barbarian* and in spite of the fact that it is an arcade game with a familiar theme, it is excellent and very addicting. Moreover, I have never seen better computer graphics and animation. The screens are real

works of art, and there is just the right blend of "cuteness" to make this one fly. To top it off there is digitized sound for added effects.

The object of the game is to get through a difficult and endless series of "screens" filled with traps, and a creative group of monsters---some whimsical and others awesome. To accomplish this task you have a sword and a number of items you find along the way. I found myself playing just to see what the next screen would be like.

Barbarian all works very well and the mouse control is a considerable improvement over the confusion of *Bratticus*. This game is recommended for all ages.

--Graham Smith, A.C.E. Vice President

New TOS ROMS
BLITTER VERSION

The 1987 revision of TOS is scheduled for release in conjunction with the new "blitter" chip. The new TOS has been upgraded to include support for the hardware blit as well as retaining the software blit functions for full compatibility with older software which relies on hardware timing (a definite no-no).

Changes in the new ROMs are:

RS232: The RS232 handler has been completely rewritten. RTS/CTS handshaking now works. Baud rates 50 and 75 now work.

CLOCK: Support is now included for the Mega ST's built-in, battery-backed-up realtime clock. The realtime clock is automatically used by the XBIOS gettime and settime functions for the IKBD. The GEMDOS clock is reset from the realtime clock at the termination of every program.

STARTUP: Memory clear at system startup is much faster, improving performance on multi-megabyte systems.

DESKTOP: The desktop now includes a control for deactivating/activating the blitter chip. Also, the Save Desktop and Print Screen selections will request confirmation. Spurious characters are no longer written to the DESKTOP.INF file. Doing a PRINT or SHOW from the desktop will now display characters with ASCII codes above 127. SHOW and PRINT use a larger buffer now. Single drive copies now require fewer disk swaps.

CART: Cartridge handling has been revides, eliminating the need for "CARTSTART" code and allowing .TOS and .TTP programs. Lower case letters will

now be accepted and passed to an application from the "Open Application Parameter" box.

AES: The AES will now send repeat clicks if the mouse button is helddown on the arrow or page controls of a window, which lets a window smooth scroll. The AES underscore bug is now fixed. APPL_TPLAY and APPL_TRECORD now work. The limit of 30 characters on a line in an alert box is now rigidly enforced.

MOUSE: The mouse redraw can now be set to XOR mode. The system will return after a single click if this is what was requested.

DMA: The DMA bus can now have more than one device attached at powerup time, without any special software.

FLOPPY: The floppy read/write code checks for more errors now. In prior versions, the system would not report a CRC error under certain circumstances; now it will. This hurts some copy protection schemes. The format of the floppy disk has been skewed from track to track to improve disk speed; the XBIOS supports this by using - 1 for the skew value and placing a pointer to a one word per sector skew table in the previously unused longword.

VDI: The VDI will now draw arcs with small angles.

BIOS: Character out routines are much faster.

BLITTER: Automatic blitter chip support is included in line-A and VDI calls. The extended inquire will report a larger performance factor than before, allowing applications to check for the presence of the blitter. A new XBIOS call has been added to check for the blitter and to activate or deactivate it. The blit is not reentrant -- line-A and VDI should not be called from within an interrupt.

REGISTER: The registers D0, D1, D2, A0, A1, A2 have always been forfeit when a trap call was made. Now the demise of these occurs under more conditions than before.

MEMORY: Slightly more RAM is used by the system. Programs that were close to the edge on a 520ST may no longer fit.

VARIABLE: Most undocumented system variables have been moved. You were warned!

NOTES AND WARNINGS:

1. Some programs depend on the OS always being at $FC0000. This is *not* cast in stone and will probably change soon. To find the OS header, use the pointer "sysbase" as documented.

2. The 4 megabyte ST puts the screen near the end of accessible RAM. Sloppy programs that have been writing past the end of the screen will give bus errors if they do so on the 4 meg ST.

September A.C.E. Meeting

Amazon Community Center

September 9, 1987
7:30 pm

```
1330 DATA 206,9,6,208,19,173,3,6,24,
109,0,6,141,3,6,141,2,208,173,8,6,14
1,9,6
1335 DATA 206,54,6,173,54,6,240,178
1340 DATA 173,112,2,73,255,201,64,17
6,2,169,64,201,181,144,2,169,181,141
,0,208,141,5,6
1350 DATA 238,174,6,173,174,6,201,25
,144,20,169,0,141,174,6,248,173,173,
6,56,233,1,176,2,169,0,141,173,6,216

1355 DATA 173,11,6,208,7
1360 DATA 173,6,6,201,120,176,12,169
,1,133,209,169,2,141,17,6,141,18,6,1
73,54,6,201,255,208,5,165,209,141,54
,6
1365 DATA 216,173,255,6,240,36,169,6
4,141,14,212,162,2,173,10,210,41,246
,24,105,4,157,204,6,157,229,6
1367 DATA 232,224,23,208,237,169,192
,141,14,212,169,0,141,255,6,169,2,14
1,254,6
1370 DATA 173,10,6,208,7,173,60,6,20
8,20,240,42,169,0,141,0,210,169,20,1
41,61,6,141,60,6,169,0
1375 DATA 141,10,6,173,61,6,56,233,1
0,141,61,6,173,61,6,201,0,208,5,169,
0,141,60,6,141,1,210
1380 DATA 173,2,6,208,7,173,114,6,20
8,20,240,39,169,0,141,2,210,169,142,
141,63,6,141,114,6,169,0,141,2,6
1385 DATA 206,63,6,206,63,6,173,63,6
,201,128,208,5,169,0,141,114,6,141,3
,210
1390 DATA 173,115,6,208,7,173,116,6,
208,31,240,57,173,10,210,41,15,24,10
5,2,141,6,210,141,116,6,169,1,141,12
5,6
1395 DATA 169,0,141,115,6,169,169,14
1,117,6,206,125,6,208,23,169,5,141,1
25,6,206,117,6,173,117,6,201,160,208
,5
1397 DATA 169,0,141,116,6,141,7,210
1400 DATA 173,193,2,24,105,16,141,19
```

```
3,2,173,198,2,24,105,16,141,198,2
1420 DATA 206,62,6,208,48,169,3,141,
62,6,173,56,6,240,38,173,58,6,201,11
4,176,34,24,105,2,168,162,4,177,205,
200
1430 DATA 145,205,136,136,202,208,24
6,238,58,6,152,24,105,140,141,4,210,
169,173,141,5,210,76,98,228
1440 DATA 173,57,6,201,48,144,25,141
,1,208,206,57,6,169,227,141,4,210,16
9,3,141,5,210,173,58,6,141,120,6,76,
98,228
1460 DATA 174,118,6,224,255,208,2,16
2,0,189,81,6,24,105,1,141,119,6,173,
120,6,205,119,6,144,29,168,162,4,177
,205
1465 DATA 136,145,205,200,200,202,20
8,246,206,120,6,169,0,141,4,210,169,
14,141,5,210,76,98,228
1470 DATA 172,120,6,169,0,145,205,20
0,145,205,200,145,205,141,5,210,140,
59,6
1480 DATA 76,98,228
1490 DATA -1
1499 REM "PAGE 0/6 VARIABLES"
1500 RESTORE 1510:FOR N=1548 TO 1575
:READ D:POKE N,D:NEXT N
1510 DATA 1,1,1,1,1,1,1,1,1,1,1,1,1,
1
1520 DATA 255,255,255,255,255,255,1,
1,1,1,1,1,1,1
1530 FOR N=0 TO 16:POKE 1600+N,48+8*
N:NEXT N
1540 FOR N=0 TO 22:POKE 1617+N,16+4*
N:NEXT N
1543 FOR N=0 TO 19:READ D:POKE 1716+
N,D:NEXT N
1546 DATA 162,96,169,11,157,66,3,169
,0,157,72,3,157,73,3,152,32,86,228,9
6
1549 REM "MORE VARIABLES"
1550 RESTORE 1570
1560 FOR N=1 TO 31:READ D,DT:POKE D,
DT:NEXT N
```

```
1570 DATA 1538,0,1543,0,1546,0,1547,
0,1584,0,1587,0,1588,0,1591,0,1592,0
,1595,0,1596,0,203,0,209,0,205,128
1575 DATA 1700,0,1701,0,1702,0,1703,
0,1704,0,1705,0,1598,0,1600,0,207,11
0
1580 DATA 1589,1,1706,1,1707,1,1580,
9,1640,127,1641,85,1642,127,1661,5
1590 POKE 204,PMB+3:POKE 206,PMB+2:P
OKE 1700,MCB:POKE 208,PMB
1599 REM "INSERT VBI"
1600 RESTORE 1620:FOR N=1 TO 11:READ
 D:POKE PM+449+N,D:NEXT N:POKE PM+45
2,VBB
1620 DATA 104,162,0,160,1,169,7,32,9
2,228,96
1695 RETURN
1699 REM "MAINLINE CODE"
1700 N=0:RESTORE 1720
1710 READ D:IF D=-1 THEN 2000
1715 POKE MC+N,D:N=N+1:GOTO 1710
1720 DATA 104,173,44,6,201,1,176,8,1
69,0,141,53,6,141,44,6,162,7,134,84,
162,19,134,85,9,144,168,32,180,6
1721 DATA 173,53,6,208,11,173,56,6,2
08,98,173,123,6,208,93,96
1722 DATA 173,7,6,208,87,173,124,2,2
08,82,160,50,140,1,6,169,128,145,203
,141,6,6,141,173,6,169,2,141,8,6
1725 DATA 141,9,6,169,255,141,4,6,16
2,255,173,10,210,201,128,48,2,162,1,
142,0,6,41,63,24,105,95
1730 DATA 141,3,6,141,2,208,169,0,13
3,209,133,77,141,47,6,141,11,6,141,3
0,208,141,121,6,169,1,141,7,6
1735 DATA 141,17,6,141,18,6
1740 DATA 173,48,6,141,55,6,240,79,1
73,49,6,162,17,202,221,64,6,144,250,
134,85,142,45,6,173,50,6,162,23,202
1750 DATA 221,81,6,144,250,142,51,6,
142,46,6,134,84,173,48,6,141,115,6,2
01,4,208,10,173,52,6,208,13,169,1,14
1,52,6
1755 DATA 160,0,32,180,6,238,177,6,1
69,0,141,48,6,141,47,6,173,4,6,73,25
4,141,4,6
1760 DATA 173,51,6,240,110,248,169,2
4,56,237,51,6,141,169,6,173,55,6,201
,4,208,15,173,169,6,24,109,173,6,141
,169,6
1765 DATA 169,128,141,173,6,162,3,24
,189,163,6,125,166,6,157,163,6,202,2
08,244
1770 DATA 216,169,0,141,168,6,141,51
,6,141,55,6,133,84,169,4,133,85,174,
170,6,189,163,6,74,74,74,74,9,16,168
1775 DATA 32,180,6
```

```
1780 DATA 174,170,6,189,163,6,41,15,
9,16,168,32,180,6,238,170,6,174,170,
6,224,4,208,219,162,1,142,170,6
1790 DATA 169,0,133,84,169,14,133,85

1800 DATA 173,173,6,74,74,74,74,9,17
6,168,32,180,6,173,173,6,41,15,9,176
,168,32,180,6
1810 DATA 173,178,6,56,237,177,6,176
,16,141,123,6,169,0,141,53,6,141,7,6
,172,1,6,145,203
1820 DATA 173,52,6,240,47,173,56,6,2
08,42,174,46,6,189,229,6,141,193,2,1
89,81,6,141,58,6,168,162,3
1830 DATA 189,103,6,145,205,200,202,
208,247,174,45,6,189,64,6,141,57,6,1
41,1,208,141,56,6
1835 DATA 173,59,6,240,35,169,0,141,
59,6,133,85,173,118,6,133,84,160,166
,32,180,6,206,118,6
1837 DATA 208,5,169,1,141,118,6,169,
0,141,52,6,141,56,6
1840 DATA 173,121,6,240,77,238,118,6
,173,118,6,201,23,240,64,133,84,160,
0,132,85,140,0,210,32,180,6
1850 DATA 169,15,141,122,6,141,1,210
,162,50,160,50,136,208,253,202,208,2
48,206,122,6,173,122,6,208,235
1861 DATA 238,118,6,206,124,6,173,12
4,6,240,7,173,118,6,201,23,208,200,1
69,0,141,121,6,141,1,210,206,118,6
1865 DATA 169,2,141,124,6
1870 DATA 173,123,6,240,69,238,118,6
,173,118,6,201,23,240,62,133,84,169,
24,141,51,6
1875 DATA 160,0,132,85,32,180,6,238,
168,6,238,168,6,238,168,6,169,15,141
,126,6
1880 DATA 141,0,210,9,192,141,1,210,
162,50,160,150,130,208,253,202,208,2
48,206,126,6,173,126,6,208,230
1885 DATA 169,0,141,1,210,108,171,6
1890 DATA 206,118,6,173,134,6,240,46
,238,44,6,173,44,6,201,9
1900 DATA 144,5,169,9,141,44,6,169,1
5,141,135,6,141,0,210,9,160,141,1,21
0,162,100,160,150,136
1910 DATA 208,253,202,208,248,206,13
5,6,173,135,6,208,230,169,0,141,1,21
0,141,134,6,141,123,6,108,171,6
1920 DATA 104,160,3,200,192,10,240,2
5,177,88,56,241,207,240,244,176,2,14
4,14,160,4,177,88,145,207
1930 DATA 200,192,10,208,247,140,144
,6,96
1950 DATA -1
1995 RETURN
1999 REM "SCREEN LAYOUT"
```

```
2000 A$="Ball      level  1"
2005 POKE 512,128:POKE 513,PMB+1
2010 COLOR 33:PLOT 2,22:DRAWTO 2,1:D
RAWTO 17,1
2020 COLOR 36:PLOT 17,2:DRAWTO 17,22

2030 COLOR 37:PLOT 18,1:DRAWTO 18,22

2040 FOR N=1 TO 16:POSITION 19,N+1:?
#6;A$(N,N):NEXT N
2045 POSITION 2,0:? #6;"!!444444!!!!
80!!%"
2047 A=USR(PM+450):POKE 53251,200
2048 RETURN
```

DISK COMMAND
By Nicholas Higgs

Disk Command is a set of new comma
nds that you ad to BASIC or ASSEMBLE
R to assist in editing your programs
.

The listing presented here will no
t five you the new commands directly
. You must insert a formatted disk w
ith either DOS 2 or DOS 2.5 (it migh
t work with DOS 3 but I haven't test
ed it) in drive 1 and then run t;e B
Asic program which will produce an A
UTORUN.SYS file. When you re-boot th
e computer (switch on and off) you w
ill now, if you typed the DATA state
ments right(!), find a messaage on y
our screen. The message will say 'ty
pe HELP'. If you wish, typing HELP w
ill display the HELP MENU.

HOW IT WORKS
The machine code program interrupt
s the Get-byte routine of the Screen
Editor and points it to the Disk Co
mmand routine. This waits until RETU
RN is pressed and then checks the ta
ble of new commands before resuming
its normal routines.

The program protects itself from b
eing overwritten by your programming
by moving up MEMLO (743,744) and st
oring itself beneath it. It also int
errupts DOSINI (12,13) so that when
you press SYSTEM RESET it re-runs. T
he machine code is less that 3K in l
ength and because the commands are t
able driven it shouldn't be very dif
ficult to add extra commands as nexe
ssary.

THE COMMANDS   (COMMAND*OBJECT*FORMAT
)

```
DIR**Disk Directory**DIR
RENAME**Rename File**RENAME D:oldf
ile,newfile (note the D: in first fi
lename but not in second.)
DELATE**Delate file**DELATE D:file
name.ext
LOCK**Lock file**LOCK D:filename.e
xt
UNLOCK**Unlock file**UNLOCK D:file
name.ext
WRDOS**Write DOS.SYS**WRDOS (You m
ust type Y to prompt if want to writ
e DOS.SYS to Drive D1:. Note DUP.SYS
is not written.)
MEMO**Goto Memo Pad**MEMO (400/800
Users will remember the Note Pad ob
tain by typing BYE. This is similar
to that only screen will turn green
and you use the ESCAPE Key to EXIT)
HEX**HEX to DEcimal Conversion **H
EX hhhh (where hhhh is a 4 figure He
xadecimal number between 0000 and FF
FF)
DEC**Decimal to HEX Conversion**DE
C Decnum (where DEcmumis any Decimal
number between 0 and 65535)
#FORMAT**Format Disk**#FORMAT (You
need to reply Y to the prompt FORM
T (Y/N) for safety. The # was used s
o as not get confused with the BASIC
FOR statement)
KILL**Delete Routine**KILL (This c
ommand allows you to type DOS. If yo
u type DOS without typing KILL first
the System will 'appear' to LOCK UP
. Pressing systemreset woll correct
this then typing DOS again will take
you to DOS. It is better to type KI
LL before typing DOS.)
HELP**Show list of COmmands**HELP
COL**Make Screen colour BLACK** CO
L (Just a personal preference I pref
er the screen black!!)
1 REM *****************************
*
2 REM *        DISK COMMAND
*
3 REM *            by
*
4 REM *      NICHOLAS HIGGS
*
5 REM * --------------------------
*
6 REM *  PAGE 6 MAGAZINE - ENGLAND
*
7 REM *****************************
*
8 REM
```

```
10 GRAPHICS 18:POKE 87,0
20 ? :? "INSERT DOS DISK"
30 ? :? "    then hit":? "    return"
40 CLOSE #1:OPEN #1,4,0,"K:":GET #1,
KEY:CLOSE #1:IF KEY<>155 THEN 40
50 ? "↑↓    CREATING":? "↓ AUTORUN.S
YS":? "    file"
60 OPEN #1,8,0,"D:AUTORUN.SYS"
70 FOR A=1 TO 2304:READ DA:PUT #1,DA
:POKE 708,DA:NEXT A
80 CLOSE #1:GRAPHICS 0:? "↓↓↓    <<FI
NISHED>>":? "↑↓SAVE THIS PROGRAM":? "
THEN SWITCH MACHINE OFF & ON"
90 END
100 DATA 255,255,0,31,241,39,165,12,
141,22,31,165,13,141,23,31,169,21,13
3,12,169,31,133,13,24,144,3,32,37,31
,169
110 DATA 251,141,231,2,169,39,141,23
2,2,32,38,31,96,162,112,160,36,32,1,
33,173,36,228,24,105
120 DATA 1,141,114,31,173,37,228,105
,0,141,115,31,160,0,185,0,228,153,11
6,31,200,192,17,208,245
130 DATA 173,4,228,24,105,1,141,135,
31,105,0,173,5,228,141,136,31,169,11
5,141,33,3,169,31,141
140 DATA 34,3,169,133,141,120,31,169
,31,141,121,31,96,76,226,246,0,0,0,0
,0,0,0,0,0
150 DATA 0,0,0,0,0,0,0,0,0,32,226,24
6,8,201,155,240,2,40,96,142,234,32,1
40,235,32
160 DATA 169,123,133,220,169,39,133,
221,160,0,177,220,201,42,240,10,217,
128,5,208,61,200,192,6,208
170 DATA 240,160,0,24,165,220,105,7,
133,220,165,221,105,0,133,221,177,22
0,141,203,31,200,177,220,141
180 DATA 204,31,32,0,0,32,80,35,173,
254,175,201,191,208,5,169,27,32,168,
32,169,155,141,128,5
190 DATA 32,93,35,76,253,31,96,24,16
5,220,105,9,133,220,165,221,105,0,13
3,221,160,0,177,220,201
200 DATA 255,208,161,40,169,155,174,
234,32,172,235,32,96,32,37,32,32,48,
32,32,85,32,48,6,32
210 DATA 119,32,24,144,245,169,255,1
41,236,32,169,155,32,168,32,32,119,3
2,169,12,162,16,157,66,3
220 DATA 32,86,228,96,162,16,169,183
,157,68,3,169,32,157,69,3,169,6,157,
74,3,169,0,141,232
230 DATA 32,157,75,3,169,3,157,66,3,
32,86,228,140,236,32,96,162,16,169,2
02,157,68,3,169,32
240 DATA 157,69,3,169,18,157,72,3,16
9,0,157,73,3,169,7,157,66,3,32,86,22
8,140,236,32,96
250 DATA 160,0,140,235,32,172,235,32
,185,202,32,192,17,240,10,200,140,23
5,32,32,168,32,24,144,236
260 DATA 173,232,32,201,0,240,11,169
,0,141,232,32,169,155,32,168,32,96,1
69,1,141,232,32,96,141
270 DATA 233,32,173,7,228,72,173,6,2
28,72,173,233,32,96,68,58,42,46,42,1
55,68,58,68,79,83
280 DATA 46,83,89,83,155,68,58,155,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
290 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,169,0,141,198,2,96,173
300 DATA 22,31,133,12,173,23,31,133,
13,76,116,228,96,142,16,33,140,17,33
,160,0,140,235,32,172
310 DATA 235,32,185,37,31,200,140,23
5,32,201,255,240,6,32,168,32,76,12,3
3,96,32,37,32,162,16
320 DATA 169,32,157,66,3,169,135,157
,68,3,169,5,157,69,3,169,0,157,74,3,
157,75,3,32,86
330 DATA 228,140,236,32,96,32,37,32,
162,16,169,35,157,66,3,169,133,157,6
8,3,169,5,140,236,32
340 DATA 157,69,3,169,0,157,74,3,157
,75,3,32,86,228,140,236,32,96,32,37,
32,162,16,169,36
350 DATA 157,66,3,169,135,157,68,3,1
69,5,157,69,3,169,0,157,74,3,157,75,
3,32,86,228,140
360 DATA 236,32,96,32,37,32,162,16,1
69,33,157,66,3,169,135,157,68,3,169,
5,157,69,3,169,0
370 DATA 157,74,3,157,75,3,32,86,228
,140,236,32,96,70,79,82,77,65,84,32,
68,73,83,75,32
380 DATA 40,89,47,78,41,155,255,160,
0,185,199,32,153,128,5,200,192,3,208
,245,162,176,160,33,32
390 DATA 1,33,32,113,31,32,168,32,20
1,89,208,35,32,37,32,162,16,169,254,
157,66,3,169,128,157
400 DATA 68,3,169,5,157,69,3,169,0,1
57,74,3,157,75,3,32,86,228,140,236,3
2,96,160,255,140
410 DATA 236,32,96,79,75,32,84,79,32
,87,82,73,84,69,32,68,79,83,46,83,89
,83,32,40,89
420 DATA 47,78,41,155,255,162,10,160
,34,32,1,33,32,113,31,32,168,32,201,
89,208,40,32,37,32
430 DATA 162,16,169,189,157,68,3,169
,32,157,69,3,169,0,157,75,3,169,8,15
7,74,3,169,3,157
440 DATA 66,3,32,86,228,140,236,32,3
2,37,32,96,160,255,140,236,32,96,160
,255,140,236,32,160,0
450 DATA 185,132,5,32,189,34,153,132
,5,200,192,4,208,242,24,173,132,5,10
,10,10,10,109,133,5
460 DATA 133,213,24,173,134,5,10,10,
10,10,109,135,5,133,212,32,170,217,3
2,230,216,160,0,140,235
470 DATA 32,172,235,32,185,128,5,200
,140,235,32,201,127,176,6,32,168,32,
76,158,34,41,127,32,168
480 DATA 32,169,155,32,168,32,96,201
,64,144,8,201,71,176,16,56,233,55,96
,201,47,144,8,201,58
490 DATA 176,4,56,233,48,96,162,223,
160,34,32,1,33,104,104,96,78,79,84,3
2,65,32,52,32,70
500 DATA 73,71,32,72,69,88,32,78,85,
77,66,69,82,155,255,160,255,140,236,
32,169,0,133,242,133
510 DATA 212,133,213,169,5,133,244,1
69,132,133,243,32,0,216,32,210,217,1
65,213,32,34,35,165,212,32
520 DATA 34,35,169,155,32,168,32,96,
24,141,233,32,41,15,141,79,35,173,23
3,32,41,240,106,106,106
530 DATA 106,24,32,63,35,173,79,35,3
2,63,35,96,201,10,144,6,24,105,55,76
,168,32,24,105,48
540 DATA 76,168,32,0,169,32,160,0,15
3,128,5,200,192,127,208,248,96,173,2
36,32,16,104,201,255,208
550 DATA 1,96,201,128,208,7,162,124,
160,38,76,231,35,201,130,208,7,162,1
49,160,38,76,231,35,201
560 DATA 132,208,7,162,174,160,38,76
,231,35,201,136,208,7,162,206,160,38
,76,231,35,201,170,208,7
570 DATA 162,101,160,39,76,231,35,20
1,138,208,7,162,233,160,38,76,231,35
,201,140,208,7,162,6,160
580 DATA 39,76,231,35,201,143,208,7,
162,6,160,39,76,231,35,201,162,208,1
0,162,46,160,39,76,231
590 DATA 35,76,235,35,201,165,208,7,
162,63,160,39,76,231,35,201,167,208,
7,162,82,160,39,76,231
600 DATA 35,162,115,160,38,32,1,33,9
6,162,102,160,38,32,1,33,96,125,32,3
2,32,32,32,32,32
610 DATA 32,32,32,80,97,103,101,32,5
4,32,77,69,77,79,32,80,97,100,46,155
,255,173,198,2,141
620 DATA 45,36,169,212,141,198,2,162
,243,160,35,32,1,33,32,113,31,32,168
,32,201,27,208,246,169
630 DATA 0,141,198,2,169,125,32,168,
```

```
32,32,168,32,160,255,140,236,32,96,1
62,173,160,36,32,1,33
640 DATA 162,88,160,37,32,1,33,162,8
,160,38,32,1,33,173,255,175,201,191,
208,15,162,77,160,38
650 DATA 32,1,33,32,113,31,169,125,3
2,168,32,169,255,141,236,32,96,125,2
9,68,73,83,75,32,67
660 DATA 79,77,77,65,78,68,83,155,32
,32,32,66,121,32,78,73,67,75,32,72,7
3,71,71,83,155
670 DATA 32,32,32,102,111,114,32,80,
97,103,101,32,54,155,32,32,32,116,12
1,112,101,32,72,69,76
680 DATA 80,155,255,125,32,32,32,32,
32,32,32,32,32,32,32,32,200,197,204,
208,160,205,197,206,213
690 DATA 155,68,73,82,32,32,32,32,32
,32,32,32,32,32,32,32,32,32,32,32,32
,32,45,68,73
700 DATA 83,75,32,68,73,82,69,67,84,
79,82,89,155,29,82,69,78,65,77,69,32
,68,58,70,73
710 DATA 76,69,49,44,70,73,76,69,50,
32,45,82,69,78,65,77,69,83,32,70,73,
76,69,155,29
720 DATA 87,82,68,79,83,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,32,
45,87,82,73
730 DATA 84,69,32,68,79,83,46,83,89,
83,155,29,77,69,77,79,32,32,32,32,32
,32,32,32,32
740 DATA 32,32,32,32,32,32,32,32,45,
71,79,84,79,32,77,69,77,79,32,80,65,
68,155,255,29
750 DATA 75,73,76,76,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,32,
45,65,76,76
760 DATA 79,87,32,68,79,83,32,65,67,
67,69,83,83,155,68,69,76,69,84,69,32
,68,58,70,73
770 DATA 76,69,32,32,32,32,32,32,32,
32,45,69,82,65,83,69,32,70,73,76,69,
155,29,76,79
780 DATA 67,75,32,68,58,70,73,76,69,
32,32,32,32,32,32,32,32,32,45,76,
79,67,75,83
790 DATA 32,70,73,76,69,155,29,85,78
,76,79,67,75,32,68,58,70,73,76,69,32
,32,32,32,32
800 DATA 32,32,32,45,85,78,76,79,67,
75,83,32,70,73,76,69,155,29,72,69,88
,32,84,79,32
810 DATA 68,69,67,73,77,65,76,32,32,
32,32,32,32,32,45,72,69,88,32,65,70,
70,48,155,255
820 DATA 29,68,69,67,73,77,65,76,32,
84,79,32,72,69,88,32,32,32,32,32,32,
```

```
32,45,68,69
830 DATA 67,32,49,50,51,52,53,155,29
,35,70,79,82,77,65,84,32,32,32,32,32
,32,32,32,32
840 DATA 32,32,32,32,32,45,70,79,82,
77,65,84,32,68,73,83,75,155,255,32,3
2,32,32,32,32
850 DATA 32,32,32,32,32,32,200,201,2
12,160,193,206,217,160,203,197,217,1
55,255,87,111,114,107,101,100
860 DATA 32,79,107,97,121,155,255,69
,82,82,79,82,32,33,155,255,69,82,82,
79,82,32,66,114,101
870 DATA 97,107,32,75,101,121,32,80,
114,101,115,115,101,100,155,255,69,8
2,82,79,82,32,80,108,101
880 DATA 97,115,101,32,115,112,101,9
9,105,102,121,32,68,58,155,255,69,82
,82,79,82,32,67,111,109
890 DATA 109,97,110,100,32,105,110,1
18,97,108,105,100,32,102,111,114,32,
68,105,115,107,155,255,69,82
900 DATA 82,79,82,32,69,110,100,32,1
11,102,32,70,105,108,101,32,114,101,
97,99,104,101,100,155,255
910 DATA 69,82,82,79,82,32,68,101,11
8,105,99,101,32,110,111,116,32,114,1
01,115,112,111,110,100,105
920 DATA 110,103,155,255,69,82,82,79
,82,32,111,110,32,83,101,114,105,97,
108,32,66,117,115,155,255
930 DATA 69,82,82,79,82,32,111,110,3
2,68,105,115,107,101,116,116,101,155
,255,69,82,82,79,82,32
940 DATA 68,105,115,107,32,70,117,10
8,108,155,255,69,82,82,79,82,32,105,
110,32,70,73,76,69,78
950 DATA 65,77,69,155,255,69,82,82,7
9,82,32,70,105,108,101,32,76,111,99,
107,101,100,155,255,69
960 DATA 82,82,79,82,32,70,105,108,1
01,32,78,111,116,32,102,111,117,110,
100,155,255,68,73,82,42
970 DATA 42,42,155,7,32,67,79,76,42,
42,42,155,237,32,75,73,76,76,42,42,1
55,243,32,82,69
980 DATA 78,65,77,69,155,33,33,76,79
,67,75,42,42,155,68,33,85,78,76,79,6
7,75,155,106,33
990 DATA 68,69,76,69,84,69,155,141,3
3,35,70,79,82,77,65,155,195,33,87,82
,68,79,83,42,155
1000 DATA 37,34,72,69,88,42,42,42,15
5,100,34,68,69,67,42,42,42,155,247,3
4,77,69,77,79,42
1010 DATA 42,155,16,36,72,69,76,80,4
2,42,155,63,36,255,0,255,255,224,2,2
25,2,0,31
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ST Wars

Miles Computing of Canoga Park, California along with John Doe, the author of *Harrier Strike Mission*, Have developed a fast paced mouse/joystick controlled three dimensional space fighter game. Using vector-type graphics and smooth scrolling terrain along with shading to differentiate depth, this is one of the fastest moving games available for the 520/1040ST computers.

Unlike most "shoot 'em ups" this game provides more than one scenario. The first scene puts you in a corridor leading to the launch bay, after entering the bay and climbing the ladder to the cockpit, you are catapulted into an asteroid field, filled with ships aiming to kill you off. A hyperspace port lies behind you and entering it replenishes your energy, enough to make the jump into deep space. The next sequence resembles the Atari arcade game, Star Wars, in that you are shooting fighters and approaching a Starbase (similar to the Star Wars Deathstar). At the Starbase while avoiding fighter drones, and ground forces, flying through energy fields and radio towers, you enter a trench. The trench leads to a tunnel, complete with obstacles, then to an obstacle room, and finally to the Starbase Power Generator, which must be destroyed, then the flight out of the Starbase, and the screen shows the aft view so we can watch the Starbase explode.

All in all the game is well executed. The graphic displays are interesting and colorful. The game on higher levels plays fast. One thing to note though, the scoring is extremely low, I believe that most people will not find the scoring system very rewarding and will be unhappy with the low scores. Also the play on the lower levels is just too slow. The control of the ship is precise, and can be adjusted from the option screen, along with the number of missiles, amount of energy, type of mission, among other things. All in all, I believe *ST Wars* is a well executed game, but there is one other thing I should mention that might hold someone back from buying *ST Wars*, that is the price, at $49.95 I would have liked a more original concept for a game, since *Starglider* was already on the market, I don't see too many people rushing out to purchase *St Wars*. With *Harrier Strike Mission*, Miles Computing had a game with no competition, so the market could bear paying $50 for that game, but with other space games available for the ST, *ST Wars* is not sufficiently different to command that much of a monetary investment. Personally, I liked the game, and it's easier to master than *Starglider*, *Deep Space*, or some of the other games in it's class, and if I did not have any of the others, I would give *ST Wars* a good hard look.

ST Wars from Miles Computing, Inc., 7741 Alabama Ave., Suite 2, Canoga Park, CA, 91304, telephone (818) 341-1411. Retail price is $49.95.

-- Buddy L. Hammerton Jr., A.C.E. Production Manager

GRIDIRON

Another new entry in the sports simulation arena is *GRIDIRON* from Bethesda Softworks. This football simulation has been ported over from the AMIGA. In fact at one point the game asks you to "Insert your Amiga-Dos Disk". The game graphics are nothing to write home about but then again graphics are not what this game is all about.

GRIDIRON is sort of a cross between strategy and arcade with hand- eye coordination dominating. You are required to guide you team with a mouse to do all the selections as well as to control ball carriers, passers, and receivers. This is not hard at the lower levels but at the high levels it is a bit hard on the ego.

This is a worthy entry as a game simulation, but it does not have the depth of *NFL CHALLENGE* for the IBM. There is definitely some strategy, but mainly you need fast reflexes and good coordination if you are going to compete with the computer.

My major criticism is that *GRIDIRON* is a good example of over protected software. Not only is the disk copy protected but you have to enter a code sequence from the manual. I found the sequences in the manual (about 4 pages worth) not too easy to read and I bombed out several times in disgust. I believe that any method of protection that penalizes a legitimate purchaser is not worth supporting---but then that's my opinion. Be warned also that if you buy *GRIDIRON* you better have a double- sided drive to run it.

I will be reviewing soon TRUE BASIC and a new and fantastic Sprite Editor from Future Software Systems.

--Graham Smith, A.C.E. Vice President

Base Two

DBMaster One is a data base that is simple to learn and simple to use. It was included free with the purchase of the 520ST for a short time and has since been "de-bugged", enhanced somewhat and is now sold by Atari. I have been using DBMaster One for over a year and I've been very happy with the ease of use and the power. I've been just as unhappy with DBMaster One's faults. Along comes *BASE TWO*. *BASE TWO* is a data base that is simple to learn and simple to use. This sounds like my description of DBMaster One and it should. *BASE TWO* is a GEM based data base by the authors of DBMaster One and distributed by Antic

magazine through The Catalog. *BASE TWO* was written to correct the faults and include the "wish list" left out of DBMaster One.

As with all data bases, *BASE TWO* will allow you to keep track of information such as record collections, book collections, mailing lists, computer programs (did that catch your interest?), subjects on VCR tapes, etc. The big difference with *BASE TWO* (and DBMASTER ONE) is that you can learn to use it in one sitting and if you don't use it for a month, you do not have to re-learn how to use it. Like DBMaster One, *BASE TWO* consists of two programs, one to design the data base and one to actually use it. Each has the ability to find data based on selection criteria, to display that data, to report on that data and to allow modifying and adding to that data. Each allows redesigning the data base without losing the existing data. *BASE TWO* and DBMaster One "feel" and look very much alike but that is where the similarity ends.

Once a data base is created, DBMaster One does not allow its use in any other resolution. *BASE TWO* lets you switch between high and medium resolution at any time. It has a menu option to set or correct the system date. It lets you enter printer control codes to initialize the printer to italics, condensed, enlarged or any other type your printer supports.

Rather than continuing to compare DBMaster One with *BASE TWO*, I'll just say that anything you liked about DBMaster One has been incorporated in *BASE TWO* with one exception that I'll note later. (That "note later" is a common ploy used by writers to increase suspense in an otherwise dry article!). Anyway, *BASE TWO* has allowed the increased use of the keyboard so you don't have to grab the mouse after keying data. For example, to "find" all records, press control F and press return. There is no need to "click" on the "find" box. When updating a record, the cursor moves from field to field when you press return. Each field is "blocked" and can be deleted by pressing the backspace or delete key. The data can also be changed by using the cursor keys and the backspace and delete keys. This is much better than DBMaster One's allowing only the backspace and no cursor key use. But this also causes a problem since the entire data field is "blocked" and if you press delete or

backspace before moving a cursor key, the data field is deleted. This is not good. Worse, there is no way to recover the data without re-typing it. Since a field can be several hundred characters long, retyping might not be practical. An automatic move to a buffer that could replace the data using the undo key would have been a great idea. I think that a little more work should go into the keyboard operation of *BASE TWO*. Additional options include defining calculation fields that can be the calculated result of other numeric fields and/or constants. These and other numeric fields can be totaled on reports.

The most important changes incorporated in *BASE TWO* are in the reporting functions. DBMaster One's weakest link was in its report generation which gave you almost no control over field length and often cut off the end of addresses and the last few digits of my phone numbers. *BASE TWO* gives you user defined, two line headings including optional page numbers, time of day and current date. You can place data fields anywhere on the line or on more than one line. Each field size can be adjusted as desired. Data fields defined as calculation fields and can be totaled on the report. You no longer have the problem of fields that contain only numbers being automatically totaled. Another great option is allowing constants to be included in your print line. Something I really appreciate is the option to concatenate data fields. These are called "soft" fields in *BASE TWO*. Concatenating in *BASE TWO* means that the data fields will be placed one after another removing all but one space between them. The first name "John {spaces}" concatenated with the last name "Smith" will appear as "John Smith". Unfortunately, the concatenate option applies to the report rather than just to selected fields. This is excellent for address labels but not for reports with fixed headings since you never know which position a field will be placed on a line. The report designing and modifying is very easy and fast. Designing the report is done by pointing at fields and pointing at the report in much the same method as designing the data base. *BASE TWO* can store ten report definitions per base.

There are some problems with *BASE TWO*. There are some bugs in the reporting functions. I wish I could be more concise about these bugs but they were transitory and I was unable to repeat them. None of the bugs I found caused any data loss but did cause false headings or extra total lines. These cleared up as soon as I tried to repeat them. I occasionally had a problem placing a field in the report if it was to be placed on a line between two lines containing data. I had to move the lower line's data away, place the new data and then move the lower line's data back again. This was annoying but not "fatal". There are also some very important items missing. The search options should include logical operators such as "NOT EQUAL" and an "OR" option. Now there is only an "AND" comparison when you specify more than one field and there isn't any way to find records that "DO

NOT CONTAIN" specified criteria. Included is an option to convert DBMaster One files to *BASE TWO* but there is no way to import ASCII files. This was the one item that was added to DBMaster One by Atari and should be available in *BASE TWO*. Dan Matejka and Stanley Crane wrote *BASE TWO*. Dan., Stanley,.. PLEEEEZE! Make an ASCII import option available to purchasers of *BASE TWO*!

There are many other options included in *BASE TWO*. "DIF" file output, "Soft" page sides and bottoms, report sorting, print to disk or screen, help menus, and more. *BASE TWO* is memory based so you file size is limited by the amount of memory in your ST. This does allow very fast access to your data. *BASE TWO* is fast enough so you can use while on the phone to customers. I usually benchmark software subjectively. I use it and if it's comfortable and I don't feel like I'm waiting, then It passes my acceptable rating. I loaded a 2300 record, 97,000 byte file and that used only 40% of the available memory in a 520ST. The same file in a 1meg ST used 14% of the available memory. For those of you that need some timing, the longest I had to wait on a search was 10 seconds. More representative times were 1 - 2 seconds. If you don't have a data base, *BASE TWO* is an inexpensive introduction and will probably do everything you'll every need for home use. If you have DBMaster One and you're unhappy with the reporting function, *BASE TWO* is your answer. If you have an other data base and you're tired of needing the manual every time you have to use it, try *BASE TWO*. It's easy! It's fast! And it's even fun to design and use!

-- Steve Golden

Let's Play A Round

One of the first games to hit the market when the Atari ST was introduced was Accolade's *Mean 18*. A very sophisticated golf game that included a full set of clubs, all the trees and sand traps you needed and some very good graphics.

One of the best features of the game, was that they included a course designer program, so that you could modify any golf course to suit your liking. But alas, if you wanted to design an already existing course you had to have a surveyor's degree to get it to look right. Here comes Accolade to the rescue. The *Mean 18 Famous Course Disk Volume II*. On this disk you can travel to Inverness Club, Ohio or to Harbour Town, South Carolina and even across the Atlantic to Turnberry, Scotland.

If you don't think that these new courses are tough, then let me remind you of the large trees surrounding the fairways and the numerous bunkers that encircle the greens at Inverness Club. Or how about the beautiful

scenery and the 15 water hazards at Harbour Town. Then there is Turnberry with eight of the first eleven holes played along side the ocean.

If you are wondering what happened to *Famous Course Disk Volume I*, that was included in the Atari ST version of *Mean 18*. Now with seven courses to play; Bush Hill Country Club, St. Andrews, Pebble Beach, Augusta, Turnberry, Harbour Town, and Inverness Club; there is no need to feel bored by playing *Mean 18*. Any day can now be a golf day, see you at the first tee.

--Buddy L. Hammerton Jr., A.C.E. Production Manager

Using GEnie

To accomodate all the different kinds of computers and terminals that everyone using GEnie may own, there are a number of different 'settings' which can be made to customize the way certain things work.

You can tell GEnie how many letters will fit on one line of your screen, and how many lines your screen will hold. You can choose what you want the prompt character to be, and you can tell GEnie what code your Backspace key sends. If your Terminal Program does not send a 'true BREAK' signal, you can choose a key which will simulate a BREAK, which will allow you to signal GEnie to stop what it's doing.

When you first logged onto GEnie, you were taken through this selection process, but at that time you may not have known just what would be the best settings to choose.

If you're having problems, like not being able to escape from long directory listings, or having your messages in Mail or the Bulletin Board come out looking garbled, it would be a good idea to go over your SETTINGs and correct them if necessary.

To get to the SETTINGs section on GEnie, simply type SET at any of the main Atari Roundtable menus.

```
GEnie              ST              Page 475
          Atari ST RoundTable
          Library: ALL Libraries

1. Atari ST Bulletin Board
2. Atari ST Real-Time Conference
3. Atari ST RT Libraries
4. About the Roundtable
5. Roundtable News              870729
Enter #, <P>revious, or <H>elp?SET
          --------------------
GEnie              SET              Page 900
          Password & User Settings

1. Terminal Settings
2. Change Password
3. View/Change Handle
4. View/Change NickName
Enter #, <P>revious, or <H>elp?1
```

```
GEnie          SETUP          Page 905
               Terminal Settings

1. GEnie Setup Script
2. Terminal Settings
Enter #, <P>revious, or <H>elp?2
               --------------------
               VIEW/CHANGE
               Terminal Parameters

1. Prompt Character              63   <--'?'
2. Break Char. (0=True Break)     3   <--CTRL C
3. Character Delete Character     8   <--Backspace
4. Line Delete Character         21   <--CTRL U
5. Terminal Type                  6   <--'Misc' type
6. Page Width (# of chars)       80   <--Screen width
7. Page Length (# of lines)      24   <-- (see Note)
8. Save changes and return            <--SAVE Changes
9. Return, no save                    <--Exit
Which Item?
```

1- You can choose any character for the Prompt that GEnie sends at menus. If you have an automatic macro which requires some character other than a Question Mark, change #1 to the ASCII value of the character you want.

2- If your Terminal Program does not send a TRUE BREAK signal, you should set #2 to a key combination you can use instead. Typically, this is CONTROL C, (although any other key combination could be used). Set #2 to the ASCII value of the BREAK key you want to use. This will allow you to escape from directory listings, for example, by pressing CONTROL C.

3- This is a VERY IMPORTANT setting! #3 is the character code your BACKSPACE key sends. If it is set incorrectly, your messages will be garbled (unless you're a perfect typist!). The ONLY correct setting for #3 is 8. If yours is set to ANYTHING else, PLEASE change it to 8.

4- This is the key which will delete the entire line you are currently typing on GEnie. If you decide you don't want a line, you can use this key instead of backspacing all the way to the beginning. The typical setting for this key is CONTROL U, although again, it can be any ASCII value.

5- The Terminal Type tells GEnie if you're using a special communications terminal, or terminal emulator, such as a DEC VT-100. For most Atari Terminal Programs, this should be set at 6.

6- Page Width is the number of letters a line on your screen can hold. For the Atari ST, this should normally be set to 80.

7- Page Length tells GEnie how many lines to print out before pausing and asking you to press RETURN, so you won't miss any text. Most Atari ST Terminal programs will allow 24 lines on the screen, and a few in 'hi-res' will allow 48 lines per screen. If you would like to ELIMINATE the pauses caused by the 'Press RETURN' prompts, and let the text scroll continuously, you can set

this number to 0, and use CONTROL S to stop the text scrolling, and CONTROL Q to re-start it.

8- Once you've made any changes, and are satisfied with your selections, choose #8 to SAVE the changes for future sessions on GEnie.

9- You can exit without changing anything by selecting #9.

To make a change, type in the number of the item on the menu that you wish to change, then when asked for the new value, type it in and press RETURN. If you do make any changes, be certain to choose #8 to SAVE the changes.

RUMORS
NEW PRODUCTS
ODD AND ENDS
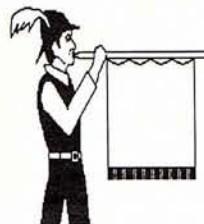
MICHTRON, who is currently marketing the fine line of GFA products has announced many new additions to the GFA line. GFA BASIC fans, and I certainly am one, will be treated to *The GFA BASIC Book*, a tutorial by the author of GFA BASIC.

Also in the works is *GFA Companion*, a new RCS editor that creates custom dialog boxes for GFA BASIC programs.

GFA OBJECT is a 3-D drawing program that allows you to create objects for use with GFA BASIC and/or with GFA VECTOR. Having used GFA VECTOR, this new release should prove interesting.

ST REPLAY is a program from Michtron that allows you to digitize sound and music and put it altogether into GFA BASIC programs.

Then there is *KNOVICE*, an artificial intelligence program that works in conjunction with GFA BASIC.

Judging by the number of programs appearing around that have been done in GFA BASIC, GFA has been accepted as the standardprograming basic for the ST. There are, however, other worthy entries in the "basic" field.

I received last week a review copy of *True BASIC*. I have not had an opportunity to get deeply into it as yet, but it comes elegantly packaged and with a wealth of available libraries it appears to have a great deal of power. Look for an indepth review in a future issue.

On the game front, Broderbund has planned to release an ST version of *Karateka*, which is probably the best

Karate game available for computers. The 8-bit version was excellent, but it remains to be seen whether the ST version is an improvement.

Mindscape has promised that *Into The Eagle's Nest* will be an excellent WWII arcade combat game. It's release date has not been defined.

--Graham Smith, A.C.E. Vice President

Superbase Personal

For those of you out there looking for an easy to use relational database system, then look no further than *Superbase Personal* from Precision Software Limited.

Superbase is a GEM based database program for people tired of the simplicity of programs like DBMaster One or the awkwardness of Regent Base. All functions are available through drop down menus, and the most frequent commands are available directly through the Atari ST keyboard. Each menu item has an associated dialog box, this is the way *Superbase* communicates with you and receives instructions on what to do next.

Anyone who has used an audio tape recorder or video cassette recorder will be able to perform most functions in *Superbase* without extensive reading of the excellent user manual. Along the bottom of the screen is a row of symbols similar in appearance to those of a VCR. These controls let you scroll the database, forward or backward, pause at any time, move to the first or last record, and stop at any time.
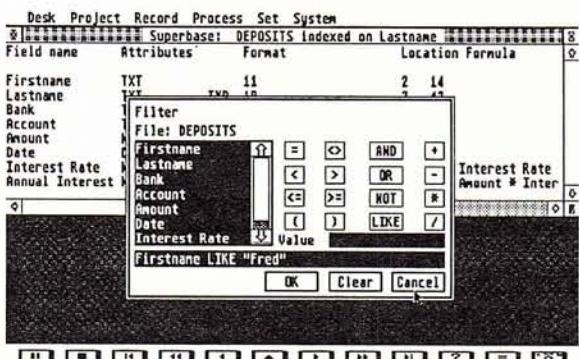
There are numerous ways to find specific information in the database file. A special Key Lookup button will find any record using the current index, and you are not limited to one index, *Superbase* allows up to 999 indexes for each file. Another button accesses external files which can be linked to each record, these files can be pictures (picture format is: IMG, a utility is provided to convert DEGAS and NeoChrome files) or ASCII text files.

Of course no database is of any use if you cannot print out your data in a useful and coherent manner. This is

where the majority of the power of *Superbase* lies. The reports possible with *Superbase* are just impossible with all the other databases I have seen for the Atari ST.

You are able to link together information in six different database files and come up with one report, at the same time you can perform calculations on any number of fields. The results of this type of report generation, means that you can split up your database into manageable sections and you do not have to work on the whole thing at one time.

Then there is a list of mathamatical functions that rivals some spreadsheet programs. These functions include absolute value, date, day, exponent, interger, logarithm, random, along with most trigonometric functions. During report generation there are reserved words that can compete with most dialects of BASIC. All of which, makes life easier for those of us who need complex reports generated from information gathered from various sources.

Then there is the documentation, all 300+ pages. I personally regard documentation as one of the most important features of a software package. Is the documentation adequate? Yes, each function, button, menu selection, and dialog box are thoroughly discussed in it's pages. Is there a complete index? Yes and no, in the index you will find most of the information you are looking for, and what you don't find there you may be able to find in the table of contents. Are there illustrations? Yes, these help you understand better what is going on especially if you are not working through the program at the same time. And lastly, is there a complete tutorial, both disk based and written? Again the answer is yes, as a matter of fact after each section in which new functions are introduced, there are short 15 to 20 minute tutorials to guide you through the learning process.

One point that needs to be mentioned. Often times I have created a database file, then input numerous records, just to find out that I left out information I needed, or had a useless field. Superbase lets you change the definition at any time, and if you feel that the index you are using is not efficient enough you can change that too. All in all I like many of the things that *Superbase* does, and as opposed to Data Manager ST, it's alot less buggy. And compared to DBMaster One or BASE Two, it's disk based so more data can be stored, and it is fully relational.

At $149.00 retail, *Superbase* is an excellent value. Together with it's ability to link text and graphic files to your records, and other database records, this program has unlimited possibilities.

--Buddy L Hammerton Jr., A.C.E. Production Manager

A.C.E. Meeting - Sept. 9, Amazon Center

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